

## REMARKS

The non-final Office Action mailed October 3, 2003, has been received and reviewed. As of the October 3, 2003 Office Action, Claims 1-22 were pending in the application, Claims 13-17 were withdrawn from consideration and Claims 1-12 and 18-22 presently stand rejected. Applicants have amended Claims 1, 8, 18 and 21 and added new Claims 23-32. Applicants hereby cancel Claims 13-17 without prejudice and reserve the right to file a divisional patent application for further prosecution of those unelected claims. As of this amendment, Claims 1-12 and 18-32 are believed to be in condition for allowance and Applicants respectfully request reconsideration of the application as amended herein.

### 35 U.S.C. § 112, ¶ 2 Indefiniteness Rejections

The Examiner has rejected Claims 1-12 under 35 U.S.C. § 112, ¶ 2 as being indefinite. Applicants have amended Claim 1 to correct the grammatical error as suggested by the Examiner. Applicants have also made four minor corrections for consistent and complete antecedent basis in presently amended Claim 1.

The Examiner has also rejected Claims 18-22 under 35 U.S.C. § 112, ¶ 2 as being indefinite. Applicants have amended Claim 18 to correct the antecedent basis error noted by the Examiner.

Applicants believe Claims 1-12 and 18-22 are now definite and respectfully requests reconsideration of the Examiner's rejection of Claims 1-12 and 18-22 based on 35 U.S.C. § 112, ¶ 2 for indefiniteness.

### 35 U.S.C. § 102(b) Anticipation Rejections

#### Anticipation Rejection Based on U.S. Patent No. 5,598,052 to Khan et al.

Claims 1-3, 7, 9, 11, 12, 18-20 and 22 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Khan et al. Applicant has amended Claims 1 and 18 as more fully explained below. The standard for anticipation as set forth by the Court of Appeals for the Federal Circuit is as follows:

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). Emphasis added.

Khan et al. appears to disclose a cathode 404 formed of an electron emitting material such as "tungsten, molybdenum, other refractory metal or silicide", that may or may not have a "further coating on top of the cathode 404 . . . to increase its electron emission or to facilitate its heating", see Col. 13 Lines 3-8 and FIG. 13(a). However, Khan et al. is silent as to the composition of such "further coating". Furthermore, Khan et al. does not appear to disclose a cathode including an insulating layer.

Regarding Claims 1 and 18, Applicant has further amended Claims 1 and 18 to include the limitation "*a cathode comprising a first insulating layer positioned above the opening of the cavity*" emphasis added. Khan et al. fails to disclose a device including "*a cathode comprising a first insulating layer positioned above the opening of the cavity*" emphasis added as recited in currently amended Claims 1 and 18. As Claims 2-3, 7, 9 and 11-12 depend from currently amended Claim 1 and Claims 19, 20 and 22 depend from currently amended Claim 18, they too are believed to be unanticipated by Khan et al. Applicant respectfully requests reconsideration of the anticipation rejection of Claims 1-3, 7, 9, 11, 12, 18-20 and 22 based on Khan et al.

### 35 U.S.C. § 103(a) Obviousness Rejections

The Examiner has rejected Claims 4-6, 8, 10 and 21 under 35 U.S.C. § 103(a) for obviousness. M.P.E.P. 706.02(j) sets forth the standard for a § 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make

the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991), emphasis added.

Obviousness Rejection Based on U.S. Patent No. 5,598,052 to Khan et al. in view of U.S. Patent No. 5,686,790 to Curtin

Claims 4-6, 8 and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Khan et al. in view of Curtin.

Applicants have amended original Claim 8 to further elaborate the composition of the electron emitting coating to include "at least one of a metal tricarbonate, strontium, calcium or barium" as recited in currently amended Claim 8. Similarly, Applicants have amended original Claim 21 to further elaborate the composition of the electron emitting coating to include "comprises at least one of a monocarbonate, a bicarbonate, a tricarbonate, strontium, calcium or barium" as recited in currently amended Claim 21.

As Claims 4-6 and 8 depend from currently amended Claim 1, the asserted combination of Khan et al. in view of Curtin fails to satisfy the third prong of a *prima facie* case of obviousness for the reasons cited above. Similarly, Claim 21 depends from currently amended Claim 18 and, thus, is also nonobvious over the asserted combination of Khan et al. in view of Curtin. For these reasons, Applicant respectfully requests reconsideration of the obviousness rejection of Claims 4-6, 8 and 21 based on Khan et al. in view of Curtin.

Obviousness Rejection Based on U.S. Patent No. 5,598,052 to Khan et al. in view of U.S. Patent No. 6,465,132 to Jin

Claim 10 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Khan et al. in view of Jin.

As Claim 10 depends from currently amended Claim 1, original Claim 10 is believed to be nonobvious in view of the asserted combination of Khan et al. in view of Jin for failure to satisfy the third prong of a *prima facie* case of obviousness.

For these reasons, Applicant believes that Claim 10 is nonobvious over the asserted combination of Khan et al. in view of Jin. Applicant respectfully requests reconsideration of the obviousness rejections of Claim 10, based on Khan et al. in view of Jin.

#### New Claims 23-32

Applicants have added new dependent Claims 23-32 further elaborating on the structure of the cathodes recited in the respective independent claims from which they depend. Support for new Claims 23-32 may be found in the specification at paragraphs [0038]-[0048] and FIGS. 1, 2E and 4-8.

#### ENTRY OF AMENDMENTS

The amendments to Claims 1, 8, 18 and 21 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application.

### CONCLUSION

Claims 1-12 and 18-32 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicants' undersigned attorney.

The Commissioner is hereby authorized to charge any additional fee or to credit any overpayment in connection with this Amendment to Deposit Account No. 50-0881.

Respectfully Submitted,



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